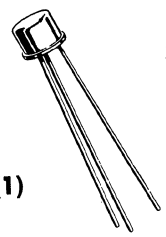
2N1175

FOR SPECIFICATIONS, SEE 2N1413-2N1415 DATA.

2N1185 thru 2N1188 (GERMANIUM)



CASE 31 (1)
(TO-5)

All leads isolated from case

PNP germanium transistors for high-gain audio amplifier and switching applications.

MAXIMUM RATINGS

Rating	Symbol	Value	Unit
Collector-Base Voltage 2N1185 2N1186-2N1188	V_{CB}	 45 60	Vdc
Collector-Emitter Voltage 2N1185 2N1186-2N1188	V_{CER}	 30 45	Vdc
Emitter-Base Voltage	V_{EB}	30	Vdc
Collector Current* (Continuous)	I_C	500*	mAdc
Storage and Operating Temperature	T_{stg}, T_J	-65 to +100	°C
Collector Dissipation in, Ambient (Derate 2.67 mW/° C above 25° C)	P_D	200	mW
Thermal Resistance Junction to Ambient	θ_{JA}	0.375	°C/mW
Thermal Resistance (Junction to Case)	θ_{JC}	0.250	°C/mW

*Limited by power dissipation

ELECTRICAL CHARACTERISTICS (T_A = 25°C unless otherwise noted)

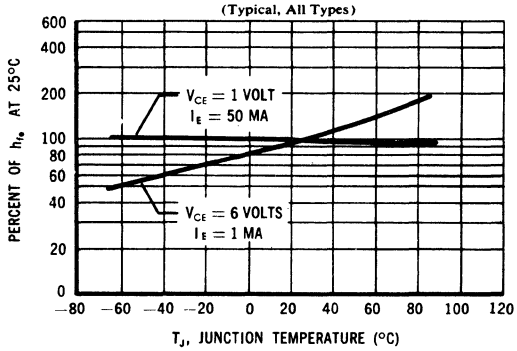
Characteristic		Symbol	Min	Typ	Max	Unit
Collector-Base Cutoff Current		I_{CBO}				μAdc
(V_{CB} = 30 V, I_E = 0)	2N1185		-	3.0	10	
(V_{CB} = 45 V, I_E = 0)	2N1186 thru 2N1188		-	5.0	10	
(V_{CB} = 60 V, I_E = 0)	2N1186 thru 2N1188		-	-	50	
(V_{CB} = 10 V, I_E = 0, T_A = +71° C)	All Types		-	55	100	
Emitter-Base Cutoff Current		I_{EBO}				μAdc
(V_{EB} = 30 V, I_C = 0)			-	3.0	10	
Collector-Emitter Leakage Current		I_{CER}				μAdc
(V_{CE} = 30 V, R_{BE} = 10 K)	2N1185		-	-	600	
(V_{CE} = 45 V, R_{BE} = 10 K)	2N1186 thru 2N1188		-	-	600	
Collector-Emitter Punch-Thru Voltage		V_{pt}				Vdc
(V_F = 1.0 V,	2N1185		45	-	-	
VTVM Impedance ≥ 1 M ohm)	2N1186 thru 2N1188		60	-	-	
Output Capacitance		C_{ob}				pF
(V_{CB} = 6 V, I_E = 0)			-	10	25	
Noise Figure		NF				dB
(V_{CE} = 4.5 V, I_E = 0.5 mA, R_g = 1 K, f = 1 kHz, Δf = 1 Hz)			-	5.0	15	
Small Signal Current Gain Cutoff Frequency		$f_{\alpha b}$				MHz
(V_{CB} = 6 V, I_E = 1 mA)	2N1185		1.75	3.0	-	
	2N1186		0.75	1.5	-	
	2N1187		1.0	2.0	-	
	2N1188		1.25	2.5	-	
Input Impedance		h_{ib}				Ohms
(V_{CB} = 6 V, I_E = 1 mA, f = 1 kHz)	2N1185		27	35	37	
	2N1186		27	31	37	
	2N1187		27	34	37	
	2N1188		27	35	37	
Output Admittance		h_{ob}				μmho
(V_{CB} = 6 V, I_E = 1 mA, f = 1 kHz)	2N1185		0.2	0.50	0.7	
	2N1186		0.2	0.65	1.0	
	2N1187		0.2	0.60	0.9	
	2N1188		0.2	0.55	0.8	
Small Signal Current Gain		h_{fe}				-
(V_{CE} = 6 V, I_E = 1 mA, f = 1 kHz)	2N1185		190	260	400	
	2N1186		30	49	70	
	2N1187		50	80	120	
	2N1188		100	130	225	
DC Current Transfer Ratio		h_{FE}				-
(V_{CE} = 1.0 V, I_C = 10 mA)	2N1185		130	170	-	
	2N1186		33	44	-	
	2N1187		45	75	-	
	2N1188		80	115	-	

ELECTRICAL CHARACTERISTICS (continued)

Characteristics		Symbol	Min	Typ	Max	Unit
Base-Emitter Input Voltage (V_{CE} = 1.0 V, I_C = 10 mA)	2N1185	V_{BE}	-	0.215	0.240	Vdc
	2N1186		-	0.245	0.270	
	2N1187		-	0.235	0.260	
	2N1188		-	0.225	0.250	
Collector-Emitter Saturation Voltage		V_{CE} (sat)				Vdc
(I_C = 50 mA, I_B = 1.0 mA)	2N1185		-	0.175	0.250	
(I_C = 50 mA, I_B = 2.5 mA)	2N1186		-	0.175	0.250	
(I_C = 50 mA, I_B = 1.67 mA)	2N1187		-	0.175	0.250	
(I_C = 50 mA, I_B = 1.25 mA)	2N1188		-	0.175	0.250	
Collector-Emitter Saturation Voltage		V_{CE} (sat)				Vdc
(I_C = 100 mA, I_B = 2.0 mA)	2N1185		-	0.250	0.500	
(I_C = 100 mA, I_B = 5.0 mA)	2N1186		-	0.250	0.500	
(I_C = 100 mA, I_B = 3.33 mA)	2N1187		-	0.250	0.500	
(I_C = 100 mA, I_B = 2.5 mA)	2N1188		-	0.250	0.500	

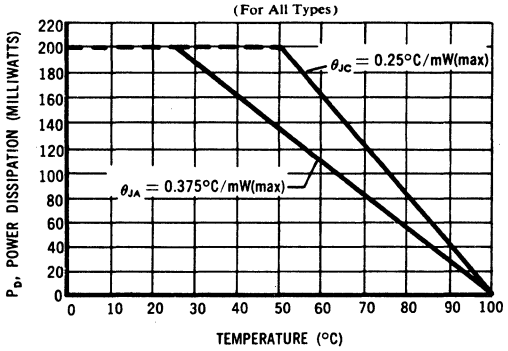
SMALL SIGNAL CURRENT GAIN(h_{fe}) versus TEMPERATURE

(Typical, All Types)

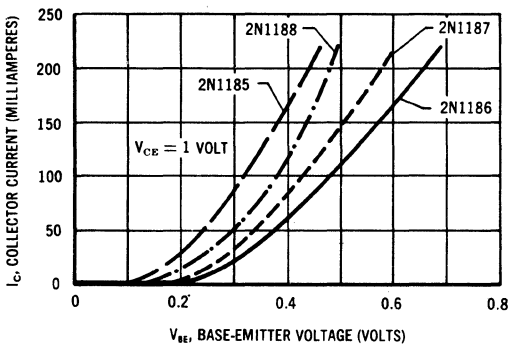


POWER-TEMPERATURE DERATING CURVE

(For All Types)



OUTPUT CURRENT versus BASE DRIVE VOLTAGE



DC CURRENT TRANSFER RATIO versus COLLECTOR CURRENT